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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,170	02/27/2002	Peter T. Baker	ANCO-57US/119	8043

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EXAMINER

VU, PHUONG T

ART UNIT PAPER NUMBER

2841

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/085,170

Applicant(s)

BAKER, PETER T.

Examiner

Phuong T. Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-7,9,10,12-16 and 35-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9,10,12-16 and 35-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-7, 9, 12, 15-16, 35-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over McSparran et al. (US 4,658,334) in view of Iwane (US 5,719,750).

Regarding claim 1, it is noted in McSparran that the reference pertains to electronic systems which provide RF isolation and shielding (column 1, lines 2-27). McSparran further states that such systems include high gain amplifiers and high gain preamplifiers.

The McSparran reference discloses a power amplifier system comprising a single circuit board 100 having a plurality of subcircuits thereon which includes a high power gain subcircuit thereon, the circuit board comprising multiple conductive layers 110-114 including a first signal distribution layer 111, a second ground layer 110 and a third signal distribution layer 112, the layers embedded in the circuit board, the second ground plane layer disposed between the first and third signal distribution layers, a chassis body (bottom component 30) and a lid structure (top component 30) for coupling with the chassis body to contain the circuit board, and a plurality of walls 37, 33 extending from the lid structure and disposed for surrounding the subcircuits to

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electrically isolate the subcircuits from one another on the circuit board. McSparran does not teach that the circuit board comprises a fourth conductive layer defining a fourth ground plane layer which is substantially metallized. However, Iwane teaches that it is known to provide a multilayer circuit board for a power amplifier system in a cellular phone with multiple conductive layers defining multiple signal distribution layers and two separate ground plane layers 3a and 3b which are substantially metallized and electrically insulated within the circuit board so that circuitry with different characteristics such as high frequency and low frequency characteristics may be connected to separate ground layers to minimize interference between the circuitry to prevent the operation of one area of circuitry from adversely affecting circuitry in another area. Iwane teaches that conducted interferences caused by a common ground layer is avoided which prevents deterioration of characteristics due to interference of signals among electronic components mounted on the circuit board. It would have been obvious to those skilled in the art at the time the invention was made to modify the circuit board of power amplifier system disclosed by McSparran to provide a fourth conductive layer defining a substantially metallized fourth ground plane layer for the above mentioned reasons. The fourth ground plane layer would necessarily be separated from the third signal distribution layer by a dielectric layer. Both McSparran and Iwane teach providing dielectric layers on both sides of a ground plane layer for electrical insulation.

Regarding claim 3, McSparran teaches that the walls form cavities 31 and 32 for containing the subcircuits.

Regarding claim 4, McSparran teaches that the circuit board includes a ground path 132-13 formed along a surface of the board, the wall coupling with a portion of the ground path for grounding the wall and the lid structure.

Regarding claim 5, McSparran teaches that the ground path is shaped to surround a portion of a subcircuit, the wall having a shape generally corresponding to the shape of the ground path.

Regarding claim 6, McSparran teaches that the multiple conductive layers are separated by dielectric layers 121-124, the first conductive layer being coupled to components of the subcircuits.

Regarding claim 7, the McSparran reference teaches that the third signal layer is separated from the second ground plane layer by a dielectric layer 122 and is configured for distributing signals across the circuit board and between subcircuit components.

Regarding claim 9, the McSparran reference speaks only generally of gain amplifier circuitry but does not provide detail about specific circuitry. It would have been obvious to those skilled in the art at the time the invention was made that one of the signal distribution layers, including the first signal distribution layer would include at least some circuitry which may be considered a controlled impedance circuit as gain amplifiers typically include controlled impedance circuits coupled to the output of the amplifiers to function as feedback networks. Utilizing the ground plane of the second layer to complete circuits is expedient in the art.

Regarding claim 12, McSparran teaches that the lid structure includes component clearance areas 31, 32 adapted to provide clearance for components of the subcircuits.

Regarding claim 15, neither of the references teaches providing a gasket coupled to the wall and positioned between the wall and the ground isolation path for further providing isolation. Use of gaskets in such a configuration for providing radio frequency shielding is expedient in the art.

Regarding claim 16, McSparran teaches that the chassis body includes at least one channel 31 or 32 adapted to contain at least one subcircuit extending downwardly from the circuit board.

Regarding method claims 35-40, one would necessarily perform the recited steps in the manufacture of the apparatus rejected above.

3. Claims 13-15, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over McSparran et al. (US 4,658,334) in view of Iwane (US 5,719,750) and Pressler et al. (US 5,550,713).

Regarding claims 13-14, the McSparran and Iwane references do not show that the chassis body includes at one coupling channel/pathway formed therein to allow coupling connections between subcircuits. However, Pressler teaches that it is known to provide coupling channels 101 for coupling connections between subcircuits in an assembly comprising a circuit board 50 with a plurality of subcircuits, a chassis body 84 and a lid structure 82 for coupling with the chassis body, and at least one wall 88 extending from the lid structure and surrounding the subcircuit to electrically isolate the

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subcircuit from other subcircuits on the circuit board. It would be obvious to those skilled in the art at the time the invention was made to provide at least one coupling channel/pathway formed in the wall of the chassis body for allowing convenient coupling connections between the subcircuits on the outer surface board as taught by Pressler.

Regarding claim 15, the McSparran and Iwane references do not show providing a gasket which is coupled to the wall for further isolating the subcircuit. However, Pressler teaches providing gasket 105 coupled to a wall of a cover and positioned between the wall and the ground isolation path for further isolating a subcircuit of circuit board. It would have been obvious to those skilled in the art at the time the invention was made to provide a gasket as shown by Pressler to provide a more effective seal between the wall and the circuit board for better EMI isolation and shielding protection.

Regarding method claim 38, one would necessarily perform the recited steps in the manufacture of the apparatus rejected above.

4. Claims 1, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over McSparran et al. (US 4,658,334) in view of Iwane (US 5,719,750). This is a separate and alternative rejection to the above rejection. Regarding claim 1, it is noted in McSparran that the reference pertains to electronic systems which provide RF isolation and shielding (column 1, lines 2-27). McSparran further states that such systems include high gain amplifiers and high gain preamplifiers.

The McSparran reference discloses a power amplifier system comprising a single circuit board 100 having a plurality of subcircuits thereon which includes a high power gain subcircuit thereon, the circuit board comprising multiple conductive layers 110-114

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including a first signal distribution layer 112 and a third signal distribution layer 114, and a fourth conductive layer 110 separated from the third signal distribution layer by a dielectric layer 122 and defining a fourth ground plane layer, the layers embedded in the circuit board. McSparran does not teach that the circuit board comprises a second ground plane layer. However, Iwane teaches that it is known to provide a multiplayer circuit board for a power amplifier system in a cellular phone with multiple conductive layers defining multiple signal distribution layers and two separate ground plane layers 3a and 3b which are substantially metallized and electrically insulated within the circuit board so that circuitry with different characteristics such as high frequency and low frequency characteristics may be connected to separate ground layers to minimize interference between the circuitry to prevent the operation of one area of circuitry from adversely affecting circuitry in another area. Iwane teaches that conducted interferences caused by a common ground layer is avoided which prevents deterioration of characteristics due to interference of signals among electronic components mounted on the circuit board. It would have been obvious to those skilled in the art at the time the invention was made to modify the circuit board of power amplifier system disclosed by McSparran to provide a second conductive layer disposed between the first and third signal distribution layers and defining a substantially metallized second ground plane layer for providing an additional separate and electrically isolated ground plane layer for connection to the first and third signal layers to minimize interference between circuitry on these layers and the circuitry on other layers in the circuit board as taught by Iwane. McSparran further discloses a chassis body (bottom component 30) and a lid structure



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(top component 30) for coupling with the chassis body to contain the circuit board, and a plurality of walls 37, 33 extending from the lid structure and disposed for surrounding the subcircuits to electrically isolate the subcircuits from one another on the circuit board.

Regarding claim 10, McSparran teaches that the fourth conductive layer is electrically coupled to the chassis body.

### ***Conclusion***

5. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. McSparran teaches a fourth conductive layer separated from the third signal distribution which has a ground plane area provided. It may be considered that this fourth conductive layer is substantially metallized, however, it is recognized this layer may not be considered a ground plane layer as recited in the pending amended claims. However, as mentioned above, the newly cited Iwane reference teaches providing multiple conductive ground plane layers in a circuit board for a power amplifier system of a cellular phone where the separate ground plane layers are provided for minimizing interference between circuitry with different characteristics provided on the circuit board.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong T. Vu whose telephone number is (703) 308-0303. The examiner can normally be reached on Mon. & Tues., 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin be reached on (703) 308-3121. The fax phone numbers for

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the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

PTV<sub>u</sub>  
Patent Examiner  
July 23, 2003

A handwritten signature in black ink, appearing to be 'PTV' followed by a stylized flourish.